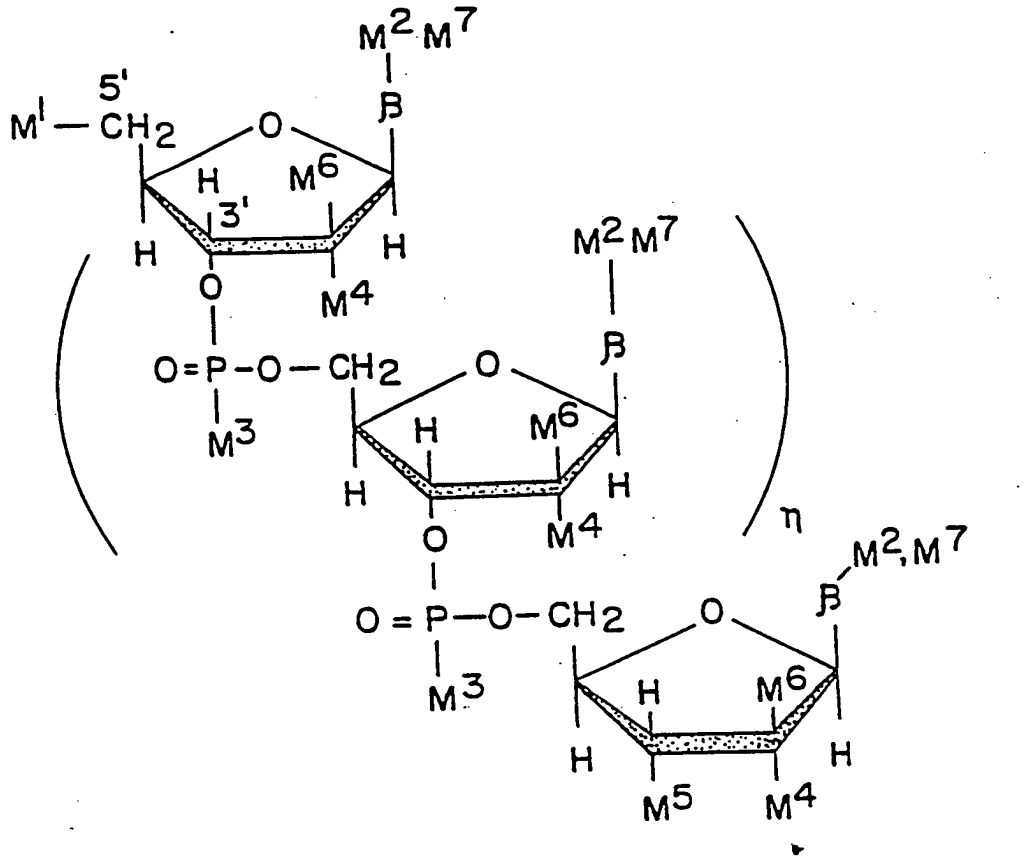


η = 1 – 50

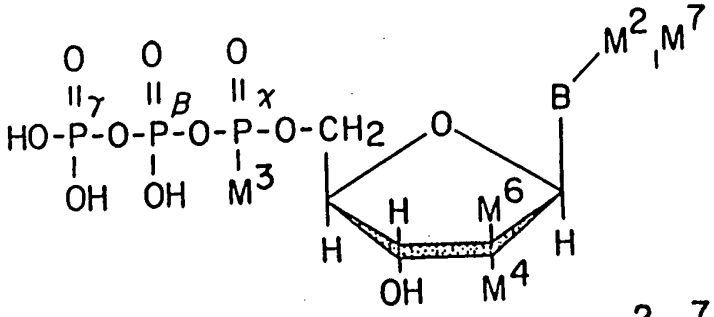
M = H, OH, XR, Halogen, N_3

FIGURE 1A

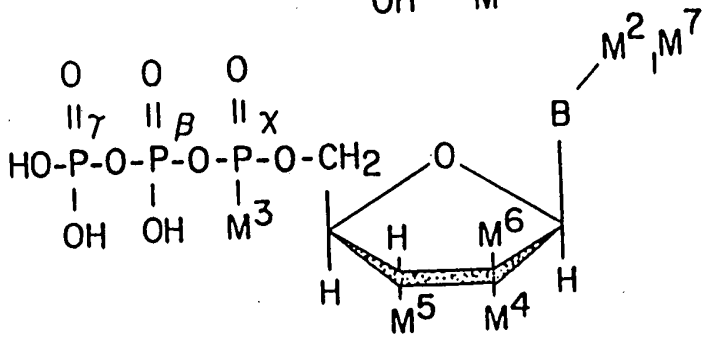
	M^1	M^2	M^3	M^5
Type Ia (base modified DNA)	OH	XR/Hal	OH	H
Type Ib (base modified RNA)	OH	XR/Hal	OH	OH
Type IIa (5'-modified DNA)	XR/Hal	H	OH	H
Type IIb (5'-modified RNA)	XR/Hal	H	OH	OH
Type III (3'-modified)	OH	H	OH	XR/Hal
Type IVa (P-modified DNA)	OH	H	XR	H
Type IVb (P-modified RNA)	OH	H	XR	OH

FIGURE 1B

Nucleoside Triphosphate Elongators:



Nucleoside Triphosphate Terminators:



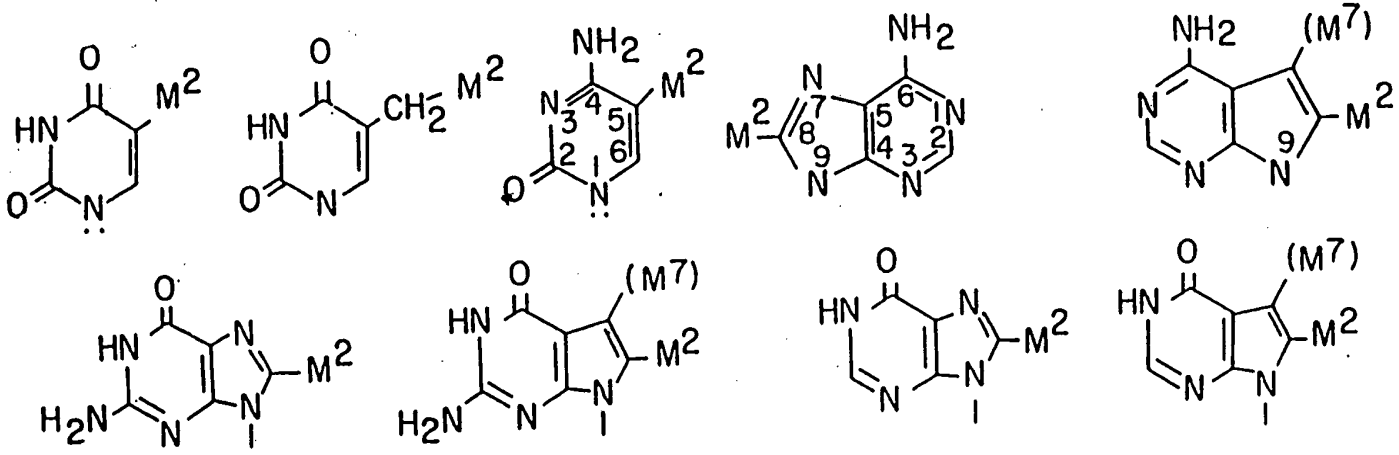
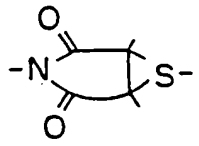


FIGURE 2A

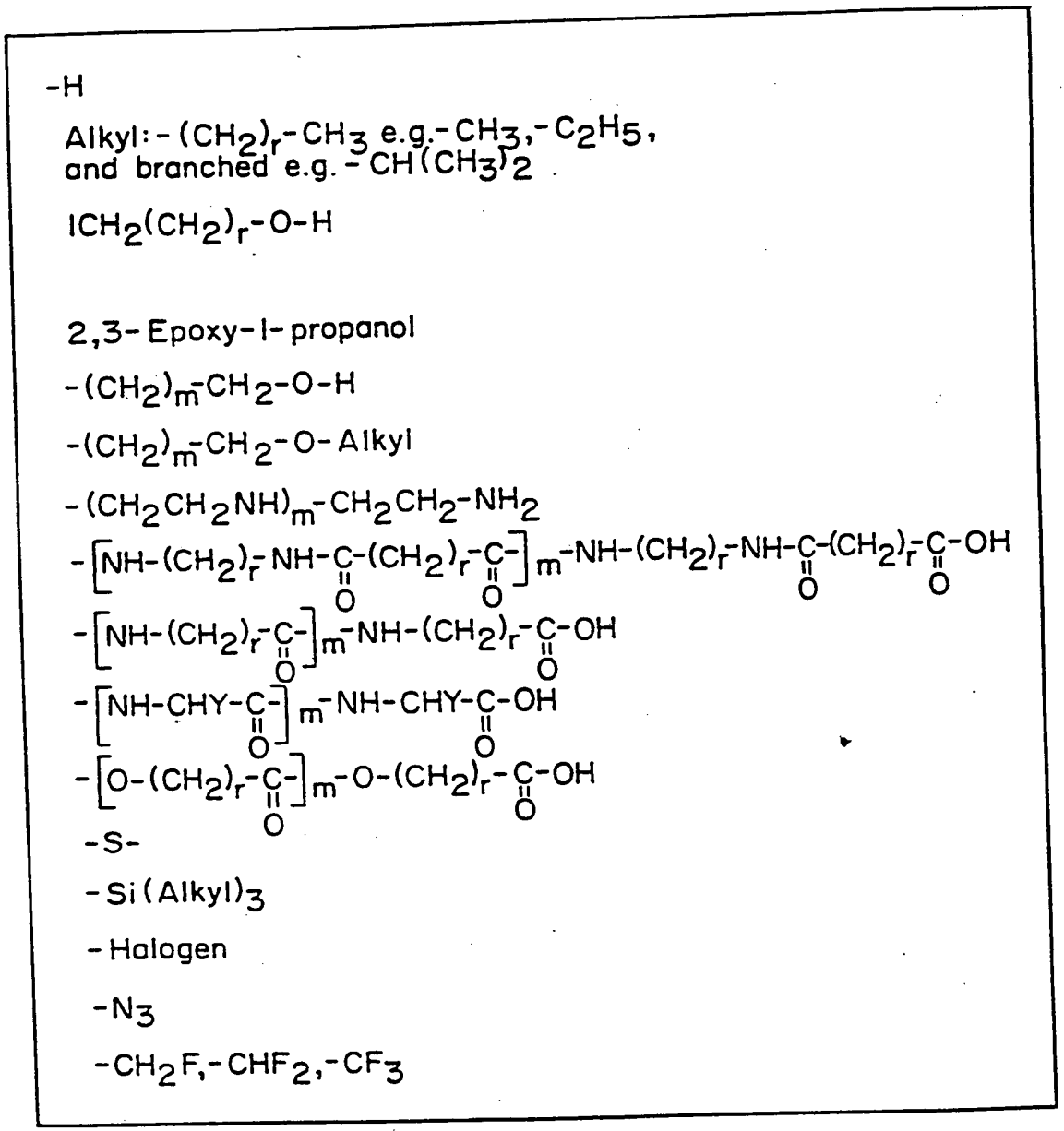
	M^2	M^3	M^4	M^5
Type A (DNA-Termination)	XR	OH	H	H
Type B (DNA-Termination)	H	OH	H	XR
Type C (DNA-Termination)	H	XR	H	H
Type D (RNA-Termination)	XR	OH	OH	H
Type E (RNA-Termination)	H	OH	OH	XR
Type F (RNA-Termination)	H	XR	OH	H

FIGURE 2B

X	R
-O-	$-(CH_2CH_2O)_m-CH_2CH_2-OH$ or $-(CH_2CH_2O)_m-CH_2CH_2O-Alkyl$
$-O-C-(CH_2)_r-C-O-$ (O, O)	$-(CH_2CH_2O)_m-CH_2CH_2-OH$ or $-(CH_2CH_2O)_m-CH_2CH_2-O-Alkyl$
$-NH-C-/-C-NH-$ (O, O)	$-(CH_2CH_2O)_m-CH_2CH_2-OH$ or $-(CH_2CH_2O)_m-CH_2CH_2-O-Alkyl$
$-NH-C-(CH_2)_r-C-O-$ (O, O)	$-(CH_2CH_2O)_m-CH_2CH_2-OH$ or $-(CH_2CH_2O)_m-CH_2CH_2-O-Alkyl$
$-NH-C-NH-$ (S)	$-(CH_2CH_2O)_m-CH_2CH_2-OH$ or $-(CH_2CH_2O)_m-CH_2CH_2-O-Alkyl$
$-O-P(O)-O-Alkyl$	$-(CH_2CH_2O)_m-CH_2CH_2-OH$ or $-(CH_2CH_2O)_m-CH_2CH_2-O-Alkyl$
$-O-SO_2-O-$	$-(CH_2CH_2O)_m-CH_2CH_2-OH$ or $-(CH_2CH_2O)_m-CH_2CH_2-O-Alkyl$
$-O-C(=O)-CH_2-S-$	$-(CH_2CH_2O)_m-CH_2CH_2-OH$ or $-(CH_2CH_2O)_m-CH_2CH_2-O-Alkyl$
	$-(CH_2CH_2O)_m-CH_2CH_2-OH$ or $-(CH_2CH_2O)_m-CH_2CH_2-O-Alkyl$
-S-	$-(CH_2CH_2O)_m-CH_2CH_2-OH$ or $-(CH_2CH_2O)_m-CH_2CH_2-O-Alkyl$
-NH-	$-(CH_2CH_2O)_m-CH_2CH_2-OH$ or $-(CH_2CH_2O)_m-CH_2CH_2-O-Alkyl$

m= 0, 1-200
r = 1-20

FIGURE 3



m = 0, 1 - 200
r = 1 - 20

FIGURE 4

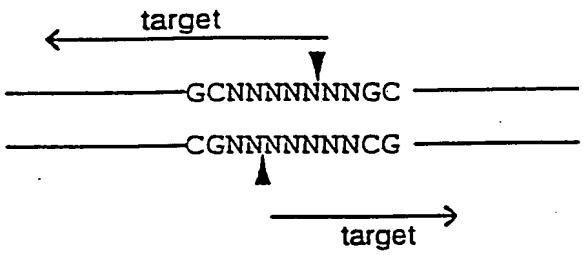


FIGURE 5

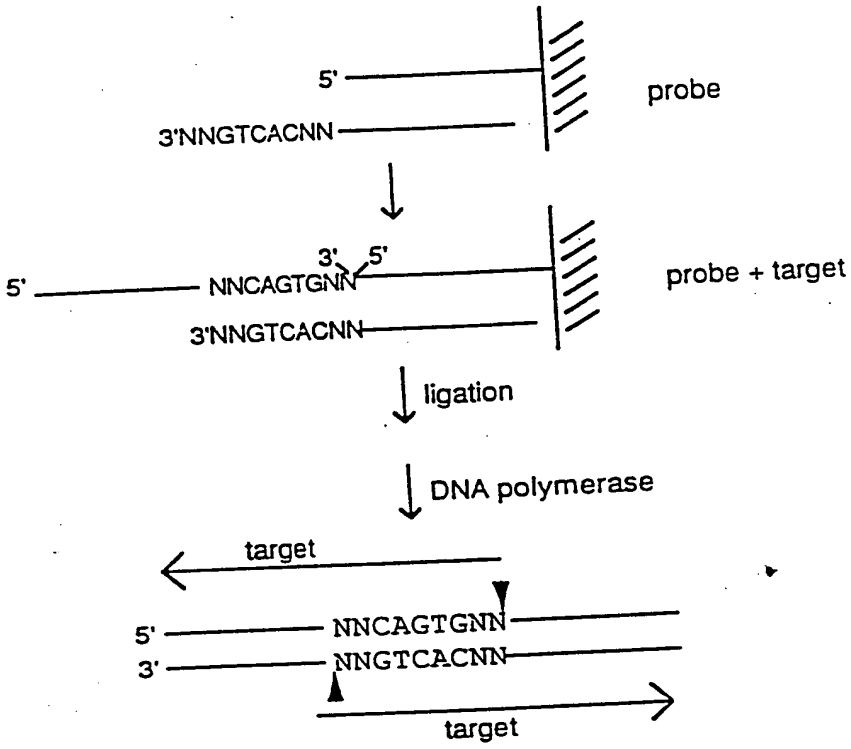

5'
3'NNGTCACNN
probe
3'
5'
5'
NNCAGTGNN
3'NNGTCACNN
probe + target
ligation
DNA polymerase
target
5'
NNCAGTGNN
3'
NNGTCACNN
target

FIGURE 6

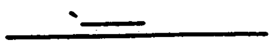
Nucleic Acid Structure	Calculated T_m (°C, average base composition) n= 8	7	6	5
	38	33	25	15
	33	25	15	3
	25	15	3	-14
	51	46	40	31
	46	40	31	21
	40	31	21	11

FIGURE 7

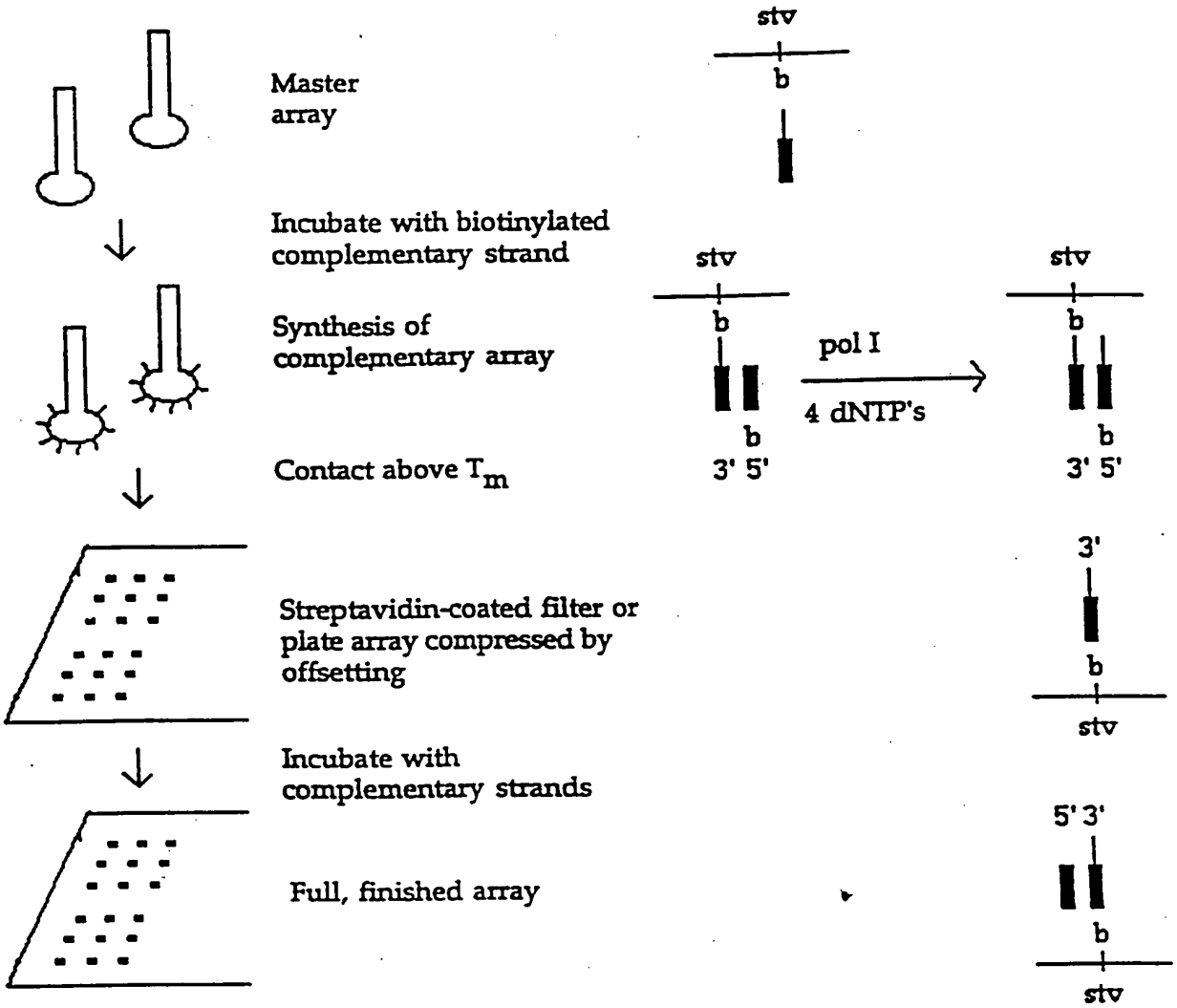

Master array
stv
b
Incubate with biotinylated complementary strand
Synthesis of complementary array
stv
b
b
3' 5'
pol I
4 dNTP's
stv
b
b
3' 5'
Contact above T_m
Streptavidin-coated filter or plate array compressed by offsetting
3'
b
stv
Incubate with complementary strands
Full, finished array
5' 3'
b
stv

FIGURE 8

Reaction Scheme for the Covalent Attachment of DNA to a Surface

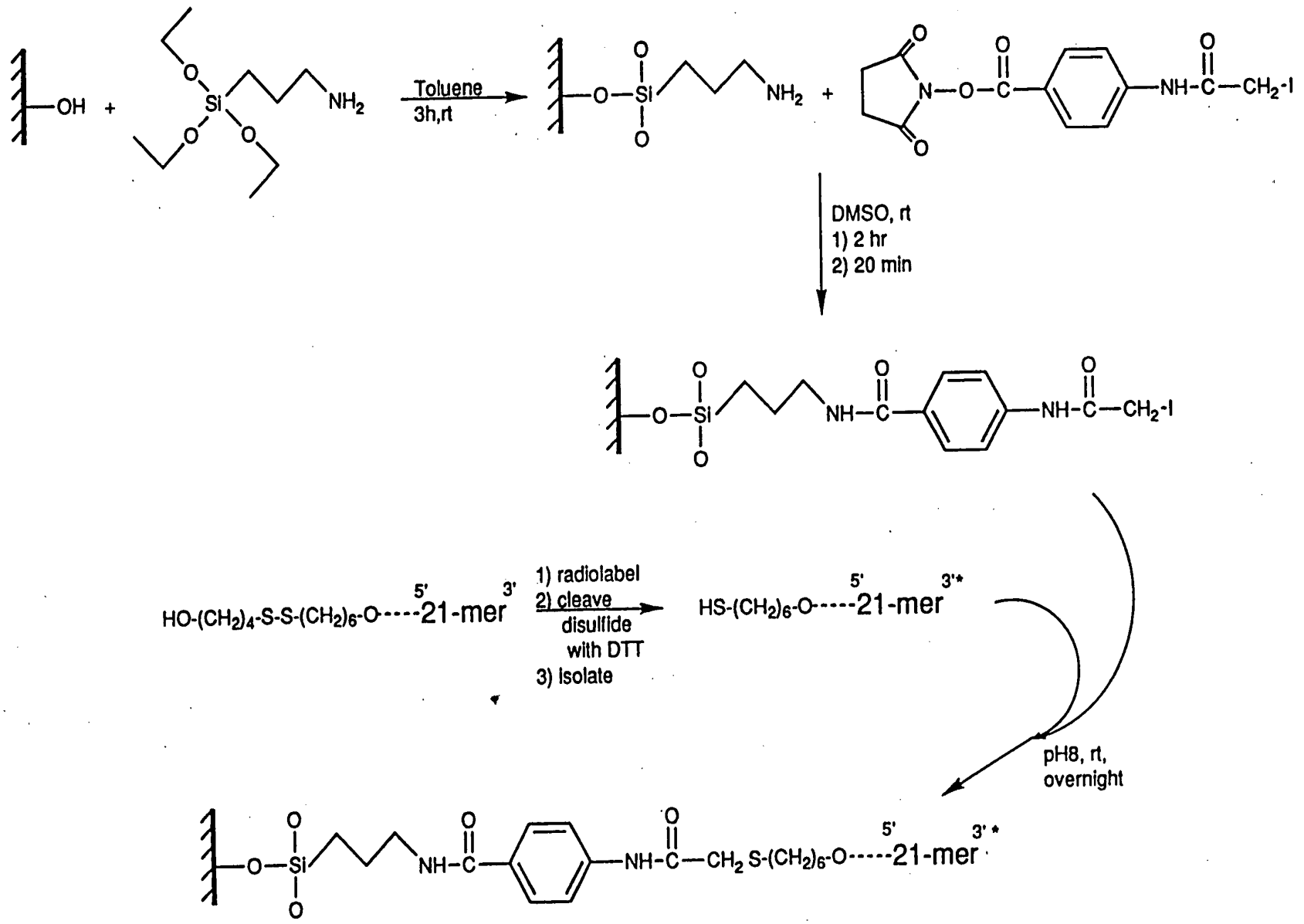


FIGURE 9

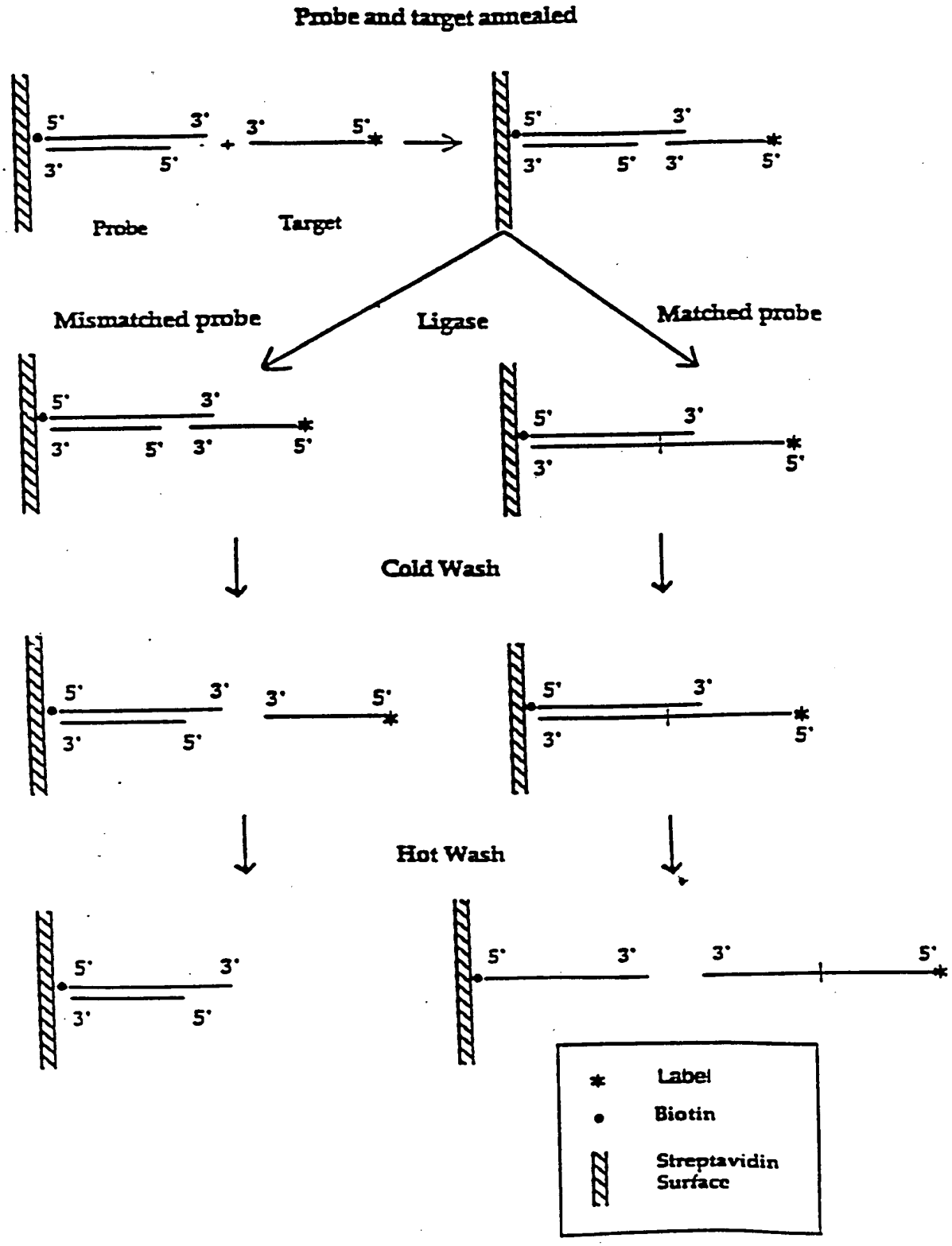

Probe and target annealed
5'
3'
3'
5'
Probe
Target
Mismatched probe
Ligase
Matched probe
Cold Wash
Hot Wash
Label
Biotin
Streptavidin Surface

FIGURE 10

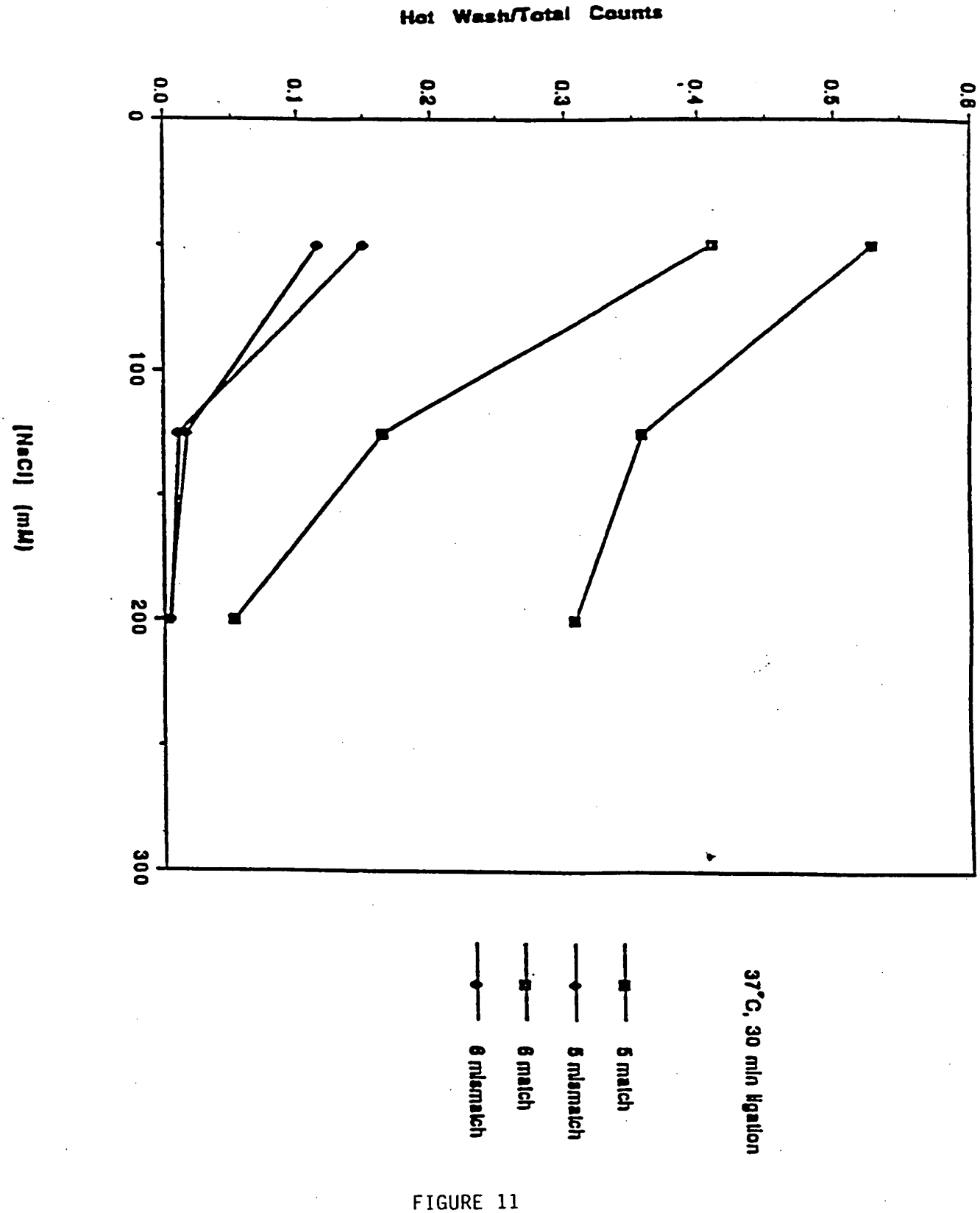

Hot Wash/Total Counts
0.0
0.1
0.2
0.3
0.4
0.5
0.8
0
100
200
300
[NaCl] (mM)
37°C, 30 min ligation
5 match
5 mismatch
6 match
6 mismatch

FIGURE 11

Ligation of target DNA with probe

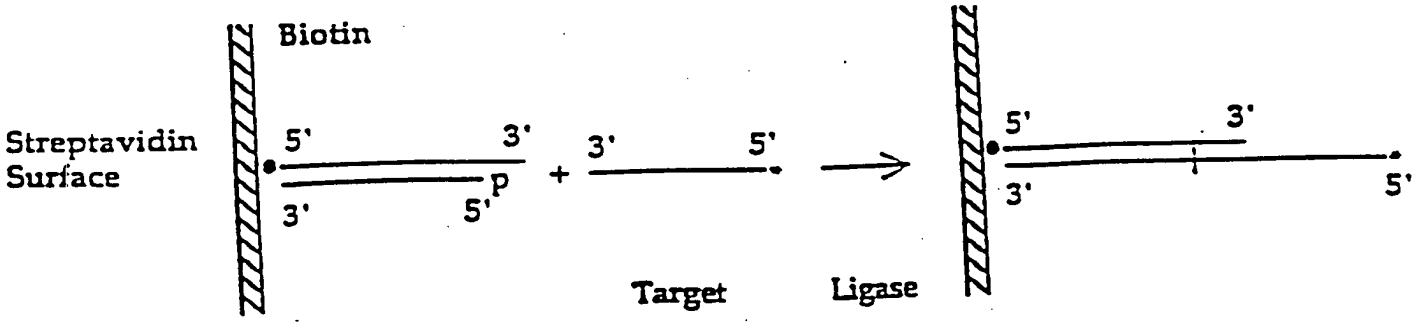


Figure 12 A.

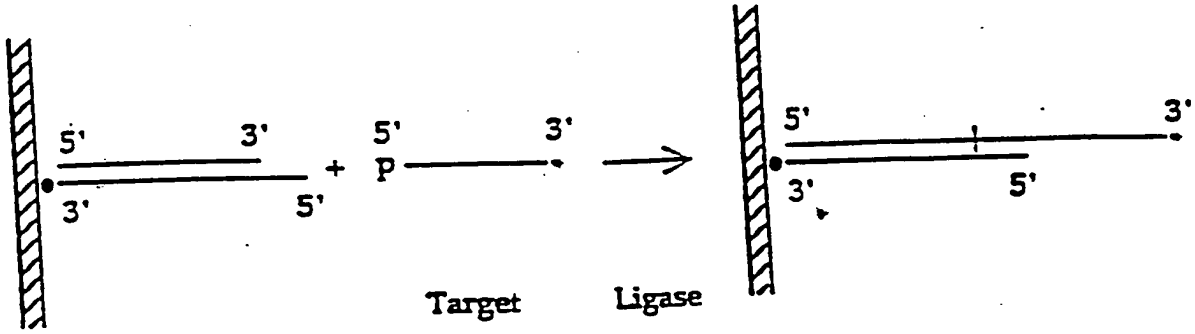


Figure 12 B.

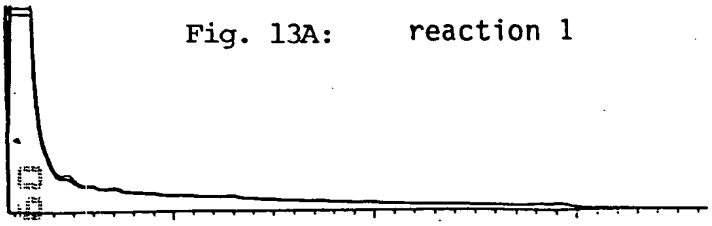


Fig. 13A: reaction 1

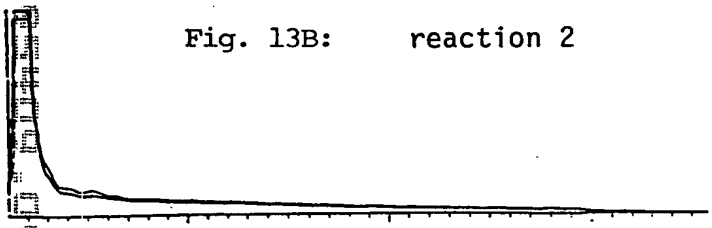


Fig. 13B: reaction 2

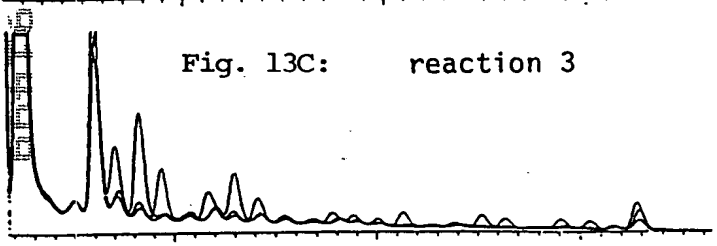


Fig. 13C: reaction 3

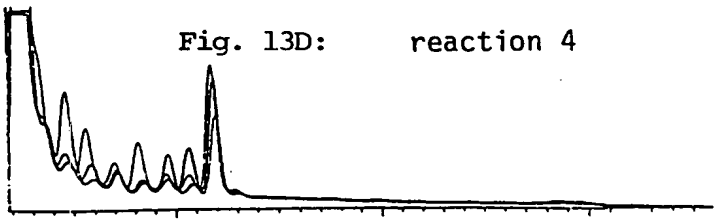


Fig. 13D: reaction 4

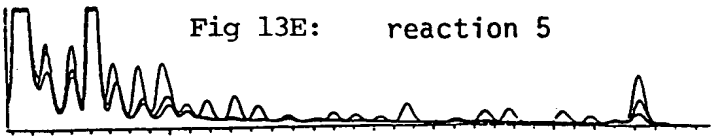


Fig 13E: reaction 5

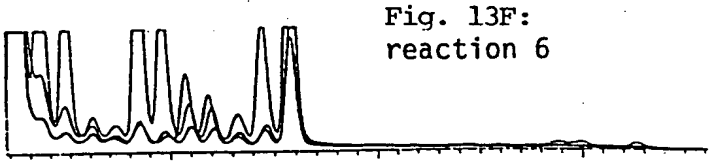


Fig. 13F: reaction 6

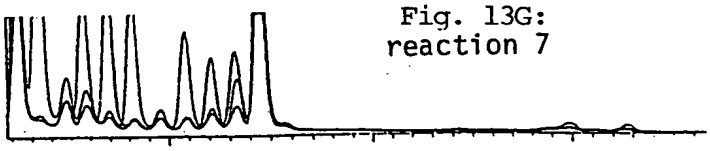


Fig. 13G: reaction 7

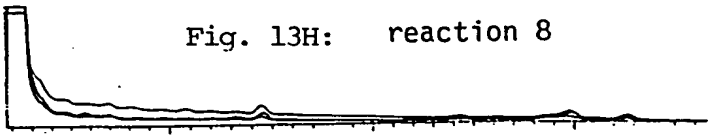


Fig. 13H: reaction 8

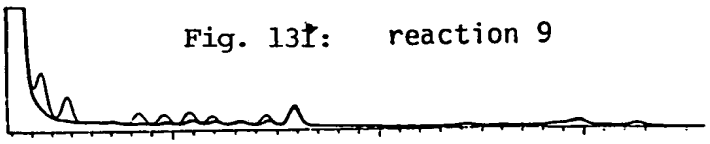


Fig. 13I: reaction 9

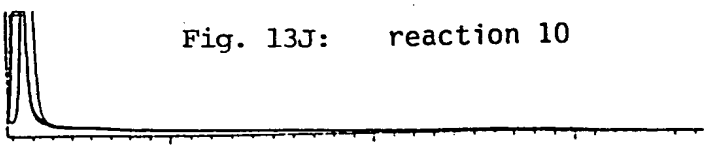


Fig. 13J: reaction 10

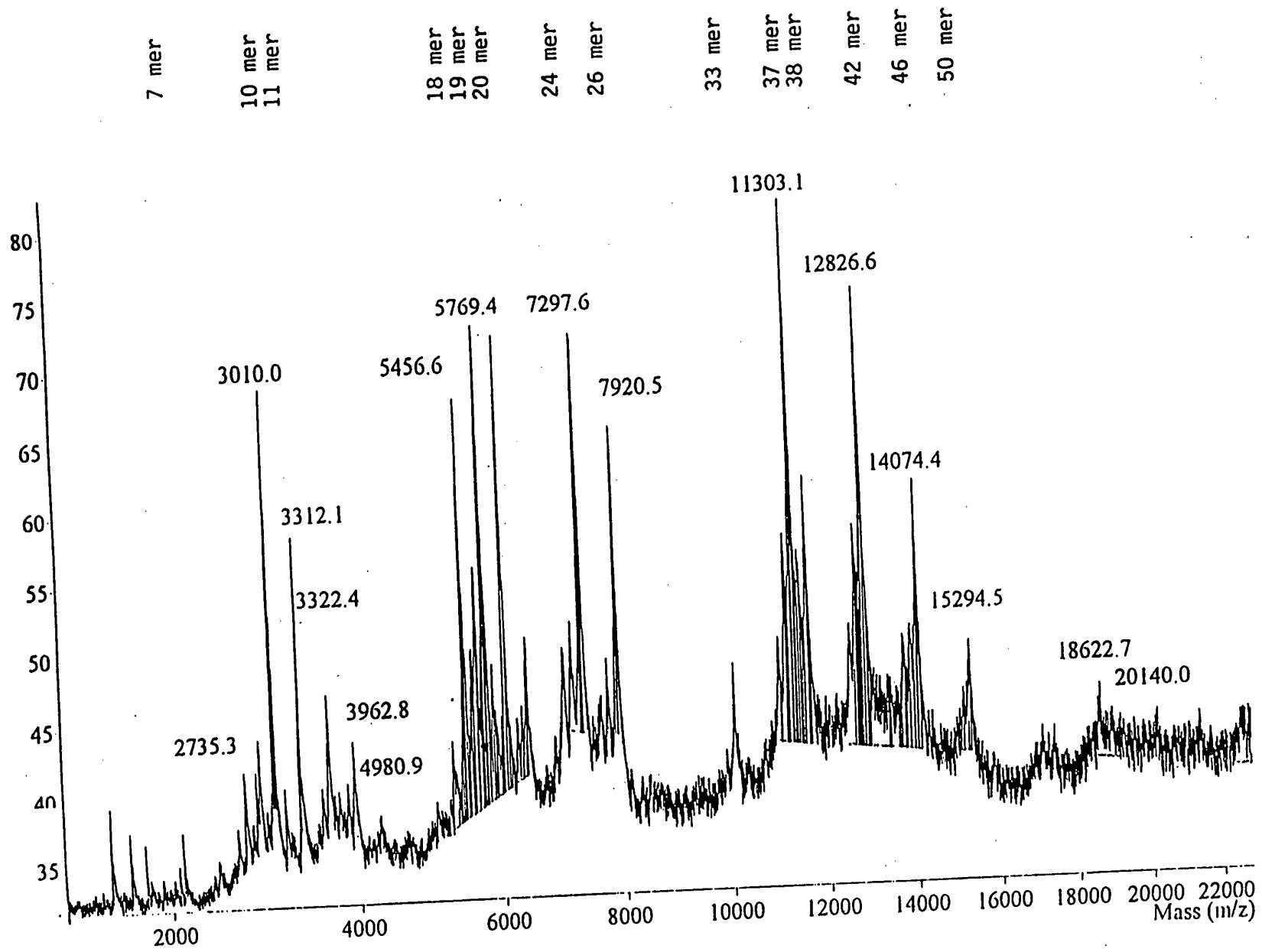

7 mer
10 mer
11 mer
18 mer
19 mer
20 mer
24 mer
26 mer
33 mer
37 mer
38 mer
42 mer
46 mer
50 mer
11303.1
12826.6
5769.4
7297.6
5456.6
3010.0
7920.5
14074.4
3312.1
3322.4
15294.5
18622.7
20140.0
3962.8
2735.3
4980.9
80
75
70
65
60
55
50
45
40
35
2000
4000
6000
8000
10000
12000
14000
16000
18000
20000
22000
Mass (m/z)

FIGURE 14

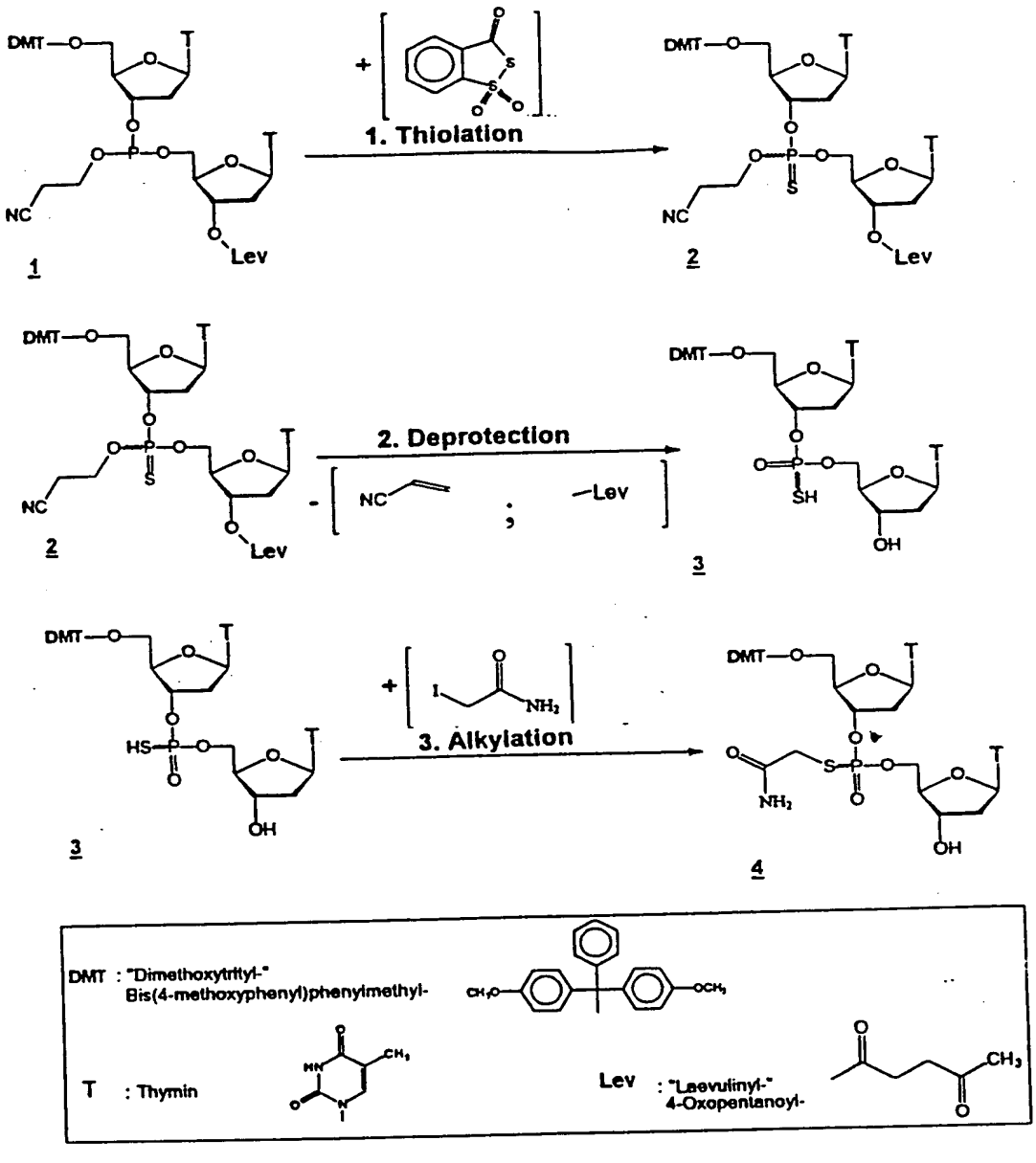

DMT
T
NC
Lev
1
1. Thiolation
2
2. Deprotection
SH
OH
3
3. Alkylation
HS
NH2
4
DMT : "Dimethoxytrityl-"
Bis(4-methoxyphenyl)phenylmethyl-
T : Thymin
Lev : "Laevulinyl-"
4-Oxopentanoyl-

FIGURE 15

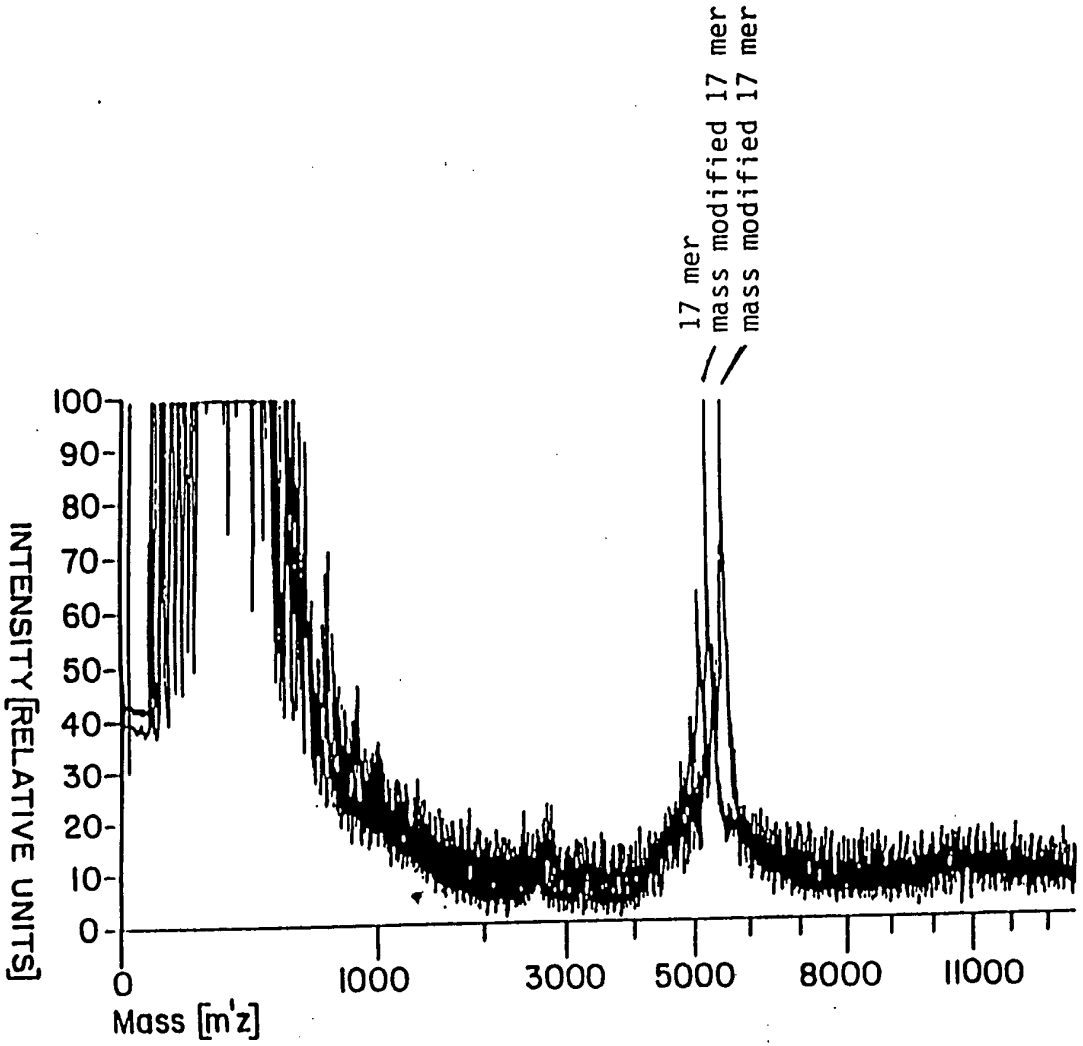


FIGURE 16